Claims:

1. A contention-based communications network in which multiple
linked-list chains of communications stations supported by said network at a
particular point in time are not always thereafter joined into a single linked-list
chain.

2. A contention-based communications network in which first and
second independent linked-list chains of communications stations, once formed, are
allowed to continue to exist independently for an indeterminate amount of time.

3. The invention of claim 2 wherein said communications network
includes a communications medium and wherein the communications stations of
said first and second chains repetitively access said medium.

4. The invention of claim 3 wherein first and second ones of said linked-
list chains of communications stations are joined into a single linked-list chain only
if the separation between them becomes less than a particular amount.

5. The invention of claim 3 wherein if the separation between said first
and second ones of said multiple linked-list chains becomes less than a particular
amount, the separation between said first and second ones of said multiple linked-list
chains in subsequent ones of said access periods is caused to be increased.

6. The invention of claim 3 wherein first and second ones of said
multiple linked-list chains are joined into a single linked-list chain on at least certain
occasions when a) the separation between them becomes less than a first particular
amount and, in addition, b) the number of communications stations in said first and
second ones of said multiple linked-list chains is not, in total, greater than a
prescribed maximum.

7. The invention of claim 3 wherein if a) the separation between said first
and second ones of said multiple linked-list chains becomes less than a second
particular amount but b) the number of communications stations in said first and
second ones of said multiple linked-list chains is greater, in total, than said
prescribed maximum, the separation between said first and second ones of said
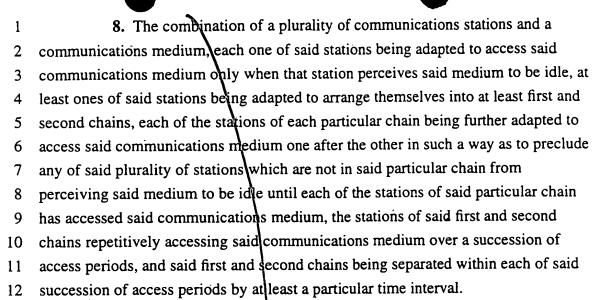multiple linked-list chains in subsequent ones of said access periods is caused to be
increased.

1   **8.** The combination of a plurality of communications stations and a

2 communications medium, each one of said stations being adapted to access said

3 communications medium only when that station perceives said medium to be idle, at

4 least ones of said stations being adapted to arrange themselves into at least first and

5 second chains, each of the stations of each particular chain being further adapted to

6 access said communications medium one after the other in such a way as to preclude

7 any of said plurality of stations which are not in said particular chain from

8 perceiving said medium to be idle until each of the stations of said particular chain

9 has accessed said communications medium, the stations of said first and second

10 chains repetitively accessing said communications medium over a succession of

11 access periods, and said first and second chains being separated within each of said

12 succession of access periods by at least a particular time interval.

1   **9.** The invention of claim 8 wherein first and second ones of said linked-

2 list chains of communications stations are joined into a single linked-list chain only

3 if the separation between them becomes less than a particular amount.

1   **10.** The invention of claim 8 wherein if the separation between said first

2 and second ones of said multiple linked-list chains becomes less than a particular

3 amount, the separation between said first and second ones of said multiple linked-list

4 chains in subsequent ones of said access periods is caused to be increased.

1   **11.** The invention of claim 8 wherein first and second ones of said

2 multiple linked-list chains are joined into a single linked-list chain if a) the

3 separation between them becomes less than a first particular amount and, in addition,

4 b) the number of communications stations in said first and second ones of said

5 multiple linked-list chains is not, in total, greater than a prescribed maximum.

1   **12.** The invention of claim 8 wherein if a) the separation between said

2 first and second ones of said multiple linked-list chains becomes less than a second

3 particular amount but b) the number of communications stations in said first and

4 second ones of said multiple linked-list chains is, in total, greater than said

5 prescribed maximum, the separation between said first and second ones of said

6 multiple linked-list chains in subsequent ones of said access periods is caused to be
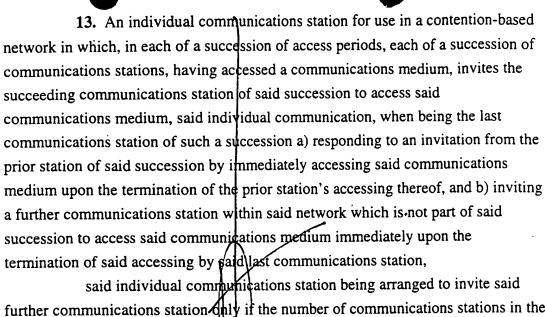
7 increased.

1   **13.** An individual communications station for use in a contention-based
2 network in which, in each of a succession of access periods, each of a succession of
3 communications stations, having accessed a communications medium, invites the
4 succeeding communications station of said succession to access said
5 communications medium, said individual communication, when being the last
6 communications station of such a succession a) responding to an invitation from the
7 prior station of said succession by immediately accessing said communications
8 medium upon the termination of the prior station's accessing thereof, and b) inviting
9 a further communications station within said network which is not part of said
10 succession to access said communications medium immediately upon the
11 termination of said accessing by said last communications station,
12   said individual communications station being arranged to invite said
13 further communications station only if the number of communications stations in the
14 succession of communications stations that would result from said inviting does not
15 exceed a prescribed maximum.

1   **14.** The invention of claim 13 wherein said individual communications
2 station is arranged to invite said further communications station only if the time
3 separation between the termination of a prior accessing by said last communications
4 station and the initiation of a prior accessing by said further communications station
5 was less than a particular amount.

1   **15.** A method for forming multiple linked-list chains of communications
2 stations in a contention-based communications network, said method characterized
3 in that said multiple linked-list chains, after having been formed, are not always
4 thereafter joined into a single linked-list chain.

1   **16.** The method of claim 15 wherein said multiple linked-list chains are
2 independent linked-list chains which are allowed to continue to exist independently
3 for an indeterminate amount of time.

1   **17.** The invention of claim 16 wherein said communications network
2 includes a communications medium and wherein the communications stations of
3 said first and second chains repetitively access said medium.

1   **18.** The invention of claim 17 wherein first and second ones of said
2 linked-list chains of communications stations are joined into a single linked-list
3 chain only if the separation between them becomes less than a particular amount.

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1   **19.** The invention of claim 17 wherein if the separation between said first
2 and second ones of said multiple linked-list chains becomes less than a particular
3 amount, the separation between said first and second ones of said multiple linked-list
4 chains in subsequent ones of said access periods is caused to be increased.

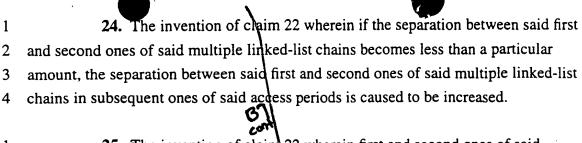1   **20.** The invention of claim 17 wherein first and second ones of said
2 multiple linked-list chains are joined into a single linked-list chain on at least certain
3 occasions when a) the separation between them becomes less than a first particular
4 amount and, in addition, b) the number of communications stations in said first and
5 second ones of said multiple linked-list chains is not, in total, greater than a
6 prescribed maximum.

1   **21.** The invention of claim 17 wherein if a) the separation between said
2 first and second ones of said multiple linked-list chains becomes less than a second
3 particular amount but b) the number of communications stations in said first and
4 second ones of said multiple linked-list chains is greater, in total, than said
5 prescribed maximum, the separation between said first and second ones of said
6 multiple linked-list chains in subsequent ones of said access periods is caused to be
7 increased.

1   **22.** A method for use in a network comprising a plurality of
2 communications stations and a communications medium, each one of said stations
3 being adapted to access said communications medium only when that station
4 perceives said medium to be idle, at least ones of said stations being adapted to
5 arrange themselves into at least first and second chains, each of the stations of each
6 particular chain being further adapted to access said communications medium one
7 after the other in such a way as to preclude any of said plurality of stations which are
8 not in said particular chain from perceiving said medium to be idle until each of the
9 stations of said particular chain has accessed said communications medium,
10   the method comprising the step wherein the stations of said first and
11 second chains repetitively accessing said communications medium over a succession
12 of access periods, said first and second chains being separated within each of said
13 succession of access periods by at least a particular time interval.

1   **23.** The invention of claim 22 wherein first and second ones of said
2 linked-list chains of communications stations are joined into a single linked-list
3 chain only if the separation between them becomes less than a particular amount.

1   **24.** The invention of claim 22 wherein if the separation between said first
2 and second ones of said multiple linked-list chains becomes less than a particular
3 amount, the separation between said first and second ones of said multiple linked-list
4 chains in subsequent ones of said access periods is caused to be increased.

1   **25.** The invention of claim 22 wherein first and second ones of said
2 multiple linked-list chains are joined into a single linked-list chain if a) the
3 separation between them becomes less than a first particular amount and, in addition,
4 b) the number of communications stations in said first and second ones of said
5 multiple linked-list chains is not, in total, greater than a prescribed maximum.

1   **26.** The invention of claim 22 wherein if a) the separation between said
2 first and second ones of said multiple linked-list chains becomes less than a second
3 particular amount but b) the number of communications stations in said first and
4 second ones of said multiple linked-list chains is, in total, greater than said
5 prescribed maximum, the separation between said first and second ones of said
6 multiple linked-list chains in subsequent ones of said access periods is caused to be
7 increased.

1   **27.** A method for use in a contention-based network in which, in each of
2 a succession of access periods, each of a succession of communications stations,
3 having accessed a communications medium, invites the succeeding communications
4 station of said succession to access said communications medium, said method
5 comprising the steps, performed in the last communications station of said
6 succession, of responding to an invitation from the prior station of said succession by
7 immediately accessing said communications medium upon the termination of the
8 prior station's accessing thereof, and
9   inviting a further communications station within said network which is
10 not part of said succession to access said communications medium immediately
11 upon the termination of said accessing by said last communications station,
12   said inviting being carried out only if the number of communications
13 stations in the succession of communications stations that would result from said
14 inviting does not exceed a prescribed maximum.

1   **28.** The invention of claim 27 wherein said inviting is carried out further
2 only if the time separation between the termination of a prior accessing by said last
3 communications station and the initiation of a prior accessing by said further
4 communications station was less than a particular amount.